

-10-

	180		185		190										
Asp	Pro	Asp	Lys	Val	Pro	Glu	Leu	Tyr	Lys	Asp	Ile	Leu	Ser	Gln	Ser
	195						200					205			

<210> 19
 <211> 194
 <212> PRT
 <213> Homo sapiens

<400> 19
 Met His Lys Trp Ile Leu Thr Trp Ile Leu Pro Thr Leu Leu Tyr Arg
 1 5 10 15
 Ser Cys Phe His Ile Ile Cys Leu Val Gly Thr Ile Ser Leu Ala Cys
 20 25 30
 Asn Asp Met Thr Pro Glu Gln Met Ala Thr Asn Val Asn Cys Ser Ser
 35 40 45
 Pro Glu Arg His Thr Arg Ser Tyr Asp Tyr Met Glu Gly Gly Asp Ile
 50 55 60
 Arg Val Arg Arg Leu Phe Cys Arg Thr Gln Trp Tyr Leu Arg Ile Asp
 65 70 75 80
 Lys Arg Gly Lys Val Lys Gly Thr Gln Glu Met Lys Asn Asn Tyr Asn
 85 90 95
 Ile Met Glu Ile Arg Thr Val Ala Val Gly Ile Val Ala Ile Lys Gly
 100 105 110
 Val Glu Ser Glu Phe Tyr Leu Ala Met Asn Lys Glu Gly Lys Leu Tyr
 115 120 125
 Ala Lys Lys Glu Cys Asn Glu Asp Cys Asn Phe Lys Glu Leu Ile Leu
 130 135 140
 Glu Asn His Tyr Asn Thr Tyr Ala Ser Ala Lys Trp Thr His Asn Gly
 145 150 155 160
 Gly Glu Met Phe Val Ala Leu Asn Gln Lys Gly Ile Pro Val Arg Gly
 165 170 175
 Lys Lys Thr Lys Lys Glu Gln Lys Thr Ala His Phe Leu Pro Met Ala
 180 185 190
 Ile Thr

<210> 20
 <211> 208
 <212> PRT
 <213> Homo sapiens

<400> 20
 Met Trp Lys Trp Ile Leu Thr His Cys Ala Ser Ala Phe Pro His Leu

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1	5	10	15
Pro Gly Cys Cys Cys Cys Cys Phe Leu Leu Leu Phe Leu Val Ser Ser	20	25	30
Val Pro Val Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu	35	40	45
Ala Thr Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly	50	55	60
Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg	65	70	75
Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly	85	90	95
Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu	100	105	110
Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser	115	120	125
Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys	130	135	140
Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly	145	150	155
Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met	165	170	175
Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr	180	185	190
Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser	195	200	205

<210> 21

<211> 239

<212> PRT

<213> Homo sapiens

<400> 21

Met Gly Leu Ile Trp Leu Leu Leu Leu Ser Leu Leu Glu Pro Gly Trp	1	5	10	15
Pro Ala Ala Gly Pro Gly Ala Arg Leu Arg Arg Asp Ala Gly Gly Arg	20	25	30	
Gly Gly Val Tyr Glu His Leu Gly Gly Ala Pro Arg Arg Arg Lys Leu	35	40	45	
Tyr Cys Ala Thr Lys Tyr His Leu Gln Leu His Pro Ser Gly Arg Val	50	55	60	
Asn Gly Ser Leu Glu Asn Ser Ala Tyr Ser Ile Leu Glu Ile Thr Ala	65	70	75	80

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Val Glu Val Gly Ile Val Ala Ile Arg Gly Leu Phe Ser Gly Arg Tyr
85 90 95

Leu Ala Met Asn Lys Arg Gly Arg Leu Tyr Ala Ser Glu His Tyr Ser
100 105 110

Ala Glu Cys Glu Phe Val Glu Arg Ile His Glu Leu Gly Tyr Asn Thr
115 120 125

Tyr Ala Ser Arg Leu Tyr Arg Thr Val Ser Ser Thr Pro Gly Ala Arg
130 135 140

Arg Gln Pro Ser Ala Glu Arg Leu Trp Tyr Val Ser Val Asn Gly Lys
145 150 155 160

Gly Arg Pro Arg Arg Gly Phe Lys Thr Arg Arg Thr Gln Lys Ser Ser
165 170 175

Leu Phe Leu Pro Arg Val Leu Asp His Arg Asp His Glu Met Val Arg
180 185 190

Gln Leu Gln Ser Gly Leu Pro Arg Pro Pro Gly Lys Gly Val Gln Pro
195 200 205

Arg Arg Arg Arg Gln Lys Gln Ser Pro Asp Asn Leu Glu Pro Ser His
210 215 220

Val Gln Ala Ser Arg Leu Gly Ser Gln Leu Glu Ala Ser Ala His
225 230 235

<210> 22
<211> 268
<212> PRT
<213> Homo sapiens

<400> 22
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Val Leu Cys Leu Gln Ala Gln Val Arg Ser Ala Ala Gln Lys Arg Gly
20 25 30

Pro Gly Ala Gly Asn Pro Ala Asp Thr Leu Gly Gln Gly His Glu Asp
35 40 45

Arg Pro Phe Gly Gln Arg Ser Arg Ala Gly Lys Asn Phe Thr Asn Pro
50 55 60

Ala Pro Asn Tyr Pro Glu Glu Gly Ser Lys Glu Gln Arg Asp Ser Val
65 70 75 80

Leu Pro Lys Val Thr Gln Arg His Val Arg Glu Gln Ser Leu Val Thr
85 90 95

Asp Gln Leu Ser Arg Arg Leu Ile Arg Thr Tyr Gln Leu Tyr Ser Arg
100 105 110

Thr Ser Gly Lys His Val Gln Val Leu Ala Asn Lys Arg Ile Asn Ala
115 120 125

Met Ala Glu Asp Gly Asp Pro Phe Ala Lys Leu Ile Val Glu Thr Asp

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130	135	140
Thr Phe Gly Ser Arg Val Arg Val Arg Gly Ala Glu Thr Gly Leu Tyr		
145	150	155
Ile Cys Met Asn Lys Lys Gly Lys Leu Ile Ala Lys Ser Asn Gly Lys		
	165	170
Gly Lys Asp Cys Val Phe Thr Glu Ile Val Leu Glu Asn Asn Tyr Thr		
	180	185
Ala Leu Gln Asn Ala Lys Tyr Glu Gly Trp Tyr Met Ala Phe Thr Arg		
	195	200
Lys Gly Arg Pro Arg Lys Gly Ser Lys Thr Arg Gln His Gln Arg Glu		
	210	215
Val His Phe Met Lys Arg Leu Pro Arg Gly His His Thr Thr Glu Gln		
	225	230
Ser Leu Arg Phe Glu Phe Leu Asn Tyr Pro Pro Phe Thr Arg Ser Leu		
	245	250
Arg Gly Ser Gln Arg Thr Trp Ala Pro Glu Pro Arg		
	260	265

<210> 23
 <211> 4177
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (593)..(1216)

<400> 23
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 ccagaagggtg ccaaccgcag aggggtgcag atatctcccc ctattcccca cccacctcc 180
 cttgggtttt gttcaccgtg ctgtcatctg tttttcagac ctttttggca tctaactatg 240
 tgaagaaagg agtaaagaag agaacaaagt aactcctggg ggagcgaaga gcgctggtga 300
 ccaacaccac caacgccacc accagctcct gctgctgcgg ccaccacgt ccaccattta 360
 ccgggaggct ccagaggcgt aggcagcggg tccgagaaaag gagcgagggg agtcagccgg 420
 cttttccgag gagttatgga tgttggtgca ttcacttctg gccagatccg cgcccagagg 480
 gagctaacca gcagccacca cctcagctc tctccttgcc ttgcatcggg tcttaccctt 540
 ccagtatgtt ctttctgatg agacaatttc cagtgccgag agtttcagta ca atg tgg 598
 Met Trp
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aaa tgg ata ctg aca cat tgt gcc tca gcc ttt ccc cac ctg ccc ggc 646
 Lys Trp Ile Leu Thr His Cys Ala Ser Ala Phe Pro His Leu Pro Gly
 5 10 15

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tgc tgc tgc tgc tgc ttt ttg ttg ctg ttc ttg gtg tct tcc gtc cct	694
Cys Cys Cys Cys Cys Phe Leu Leu Leu Phe Leu Val Ser Ser Val Pro	
20 25 30	
gtc acc tgc caa gcc ctt ggt cag gac atg gtg tca cca gag gcc acc	742
Val Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr	
35 40 45 50	
aac tct tct tcc tcc tcc ttc tcc tct cct tcc agc gcg gga agg cat	790
Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His	
55 60 65	
gtg cgg agc tac aat cac ctt caa gga gat gtc cgc tgg aga aag cta	838
Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu	
70 75 80	
ttc tct ttc acc aag tac ttt ctc aag att gag aag aac ggg aag gtc	886
Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val	
85 90 95	
agc ggg acc aag aag gag aac tgc ccg tac agc atc ctg gag ata aca	934
Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr	
100 105 110	
tca gta gaa atc gga gtt gtt gcc gtc aaa gcc att aac agc aac tat	982
Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr	
115 120 125 130	
tac tta gcc atg aac aag aag ggg aaa ctc tat ggc tca aaa gaa ttt	1030
Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe	
135 140 145	
aac aat gac tgt aag ctg aag gag agg ata gag gaa aat gga tac aat	1078
Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn	
150 155 160	
acc tat gca tca ttt aac tgg cag cat aat ggg agg caa atg tat gtg	1126
Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val	
165 170 175	
gca ttg aat gga aaa gga gct cca agg aga gga cag aaa aca cga agg	1174
Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg	
180 185 190	
aaa aac acc tct gct cac ttt ctt cca atg gtg gta cac tca	1216
Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser	
195 200 205	
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gatattcttc atgaagacag tagattgaaa ggcaaagaca cgttgcagat gtctgcttgc	1336
ttaaaagaaa gccagccttt gaagggtttt gtattcactg ctgacatatg atgttctttt	1396
aattagttct gtgtcatgtc ttataatcaa gatataggca gatcgaatgg gatagaagtt	1456
attcccaagt gaaaaacatt gtggctgggt tttttgttgt tgttgtcaag tttttgtttt	1516
taaacctctg agatagaact taaaggacat agaacaatct gttgaaagaa cgatcttcgg	1576
gaaagttatt tatggaatac gaactcatat caaagacttc attgctcatt caagccta	1636

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gtaagacaaa tacacattgg atgaccacag taacagcaaa cagggcacaa actggattct 3376
tatttcacat agacatttag attactaaag agggctatgt gtaaacagtc atcattatag 3436
tactcaagac actaaaacag cttctagcca aatatattaa agcttgacga ggccaaaaat 3496

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agaaaacatc tcccctgtct ctccacatt tccctcacag aaagacaaaa aacctgcctg 3556
 gtgcagtagc tcacacctgt aatcccagca gtttgggaga ctgtgggaag atggcttgag 3616
 tccaggagtt ctagacaggc ctgagaaacc tagtgagaca tccttctctt aaacaaaaca 3676
 aaacaaaaca aatgtagcca tgcgtggtgg catatacctg tgggtcccaac tactcaggag 3736
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 gccattgcac tccagcctgg gtgaaaaaga gccagaaaga aaggaaagag agaaaagaga 3856
 aaagaaagag agaaaagaca gaaagacagg aaggaaggaa ggaaggaagg aaggaaggaa 3916
 ggaagcaagg aaagaaggaa ggaaggaaag aagggaggga aggaaggaga gagaaagaaa 3976
 gattgtttgg taaggagtaa tgacattctc ttgcatttaa aagtggcata tttgcttgaa 4036
 atggaaatag aattctggtc ctttttgcaa ctactgaaga aaaaaaaaaag cagtttcagc 4096
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 ttcgccttat agtgagtcgt a 4177

<210> 24
 <211> 208
 <212> PRT
 <213> Homo sapiens

<400> 24
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 1 5 10 15
 Pro Gly Cys Cys Cys Cys Cys Phe Leu Leu Leu Phe Leu Val Ser Ser
 20 25 30
 Val Pro Val Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu
 35 40 45
 Ala Thr Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly
 50 55 60
 Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg
 65 70 75 80
 Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly
 85 90 95
 Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu
 100 105 110
 Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser
 115 120 125
 Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys
 130 135 140
 Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly
 145 150 155 160
 Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met

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	165		170		175	
Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr						
	180		185		190	
Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser						
	195		200		205	

<210> 25
 <211> 31
 <212> PRT
 <213> Homo sapiens

<400> 25	
Gly Gln Asp Met Val Ser Pro Glu Ala Thr Asn Ser Ser Ser Ser Ser	
1 5 10 15	
Phe Ser Ser Pro Ser Ser Ala Gly Arg His Val Arg Ser Tyr Asn	
20 25 30	

<210> 26
 <211> 19
 <212> PRT
 <213> Homo sapiens

<400> 26	
Lys Ile Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys	
1 5 10 15	
Pro Tyr Ser	

<210> 27
 <211> 30
 <212> PRT
 <213> Homo sapiens

<400> 27	
Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys	
1 5 10 15	
Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr	
20 25 30	

<210> 28
 <211> 19
 <212> PRT
 <213> Homo sapiens

<400> 28	
Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn	
1 5 10 15	
Thr Ser Ala	

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<210> 29
 <211> 555
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> CDS
 <222> (1)..(552)

<220>
 <223> Description of Artificial Sequence: pQE60-Cys37
 construct

<400> 29
 atg aga gga tgc cat cac cat cac cat cac gga tcc tgc cag gct ctg 48
 Met Arg Gly Ser His His His His His Gly Ser Cys Gln Ala Leu
 1 5 10 15
 ggt cag gac atg gtt tct ccg gaa gct acc aac tct tcc tct tcc tct 96
 Gly Gln Asp Met Val Ser Pro Glu Ala Thr Asn Ser Ser Ser Ser
 20 25 30
 ttc tct tcc ccg tct tcc gct ggt cgt cac gtt cgt tct tac aac cac 144
 Phe Ser Ser Pro Ser Ser Ala Gly Arg His Val Arg Ser Tyr Asn His
 35 40 45
 ctg cag ggt gac gtt cgt tgg cgt aaa ctg ttc tct ttc acc aaa tac 192
 Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr
 50 55 60
 ttc ctg aaa atc gaa aaa aac ggt aaa gtt tct ggg acc aag aag gag 240
 Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu
 65 70 75 80
 aac tgc ccg tac agc atc ctg gag ata aca tca gta gaa atc gga gtt 288
 Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val
 85 90 95
 gtt gcc gtc aaa gcc att aac agc aac tat tac tta gcc atg aac aag 336
 Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys
 100 105 110
 aag ggg aaa ctc tat ggc tca aaa gaa ttt aac aat gac tgt aag ctg 384
 Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu
 115 120 125
 aag gag agg ata gag gaa aat gga tac aat acc tat gca tca ttt aac 432
 Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn
 130 135 140
 tgg cag cat aat ggg agg caa atg tat gtg gca ttg aat gga aaa gga 480
 Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly
 145 150 155 160
 gct cca agg aga gga cag aaa aca cga agg aaa aac acc tct gct cac 528
 Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His
 165 170 175
 ttt ctt cca atg gtg gta cac tca tag 555
 Phe Leu Pro Met Val Val His Ser
 180

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<210> 30
 <211> 184
 <212> PRT
 <213> Artificial Sequence
 <223> Description of Artificial Sequence: pQE60-Cys37
 construct

<400> 30
 Met Arg Gly Ser His His His His His His Gly Ser Cys Gln Ala Leu
 1 5 10 15
 Gly Gln Asp Met Val Ser Pro Glu Ala Thr Asn Ser Ser Ser Ser
 20 25 30
 Phe Ser Ser Pro Ser Ser Ala Gly Arg His Val Arg Ser Tyr Asn His
 35 40 45
 Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr
 50 55 60
 Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu
 65 70 75 80
 Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val
 85 90 95
 Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys
 100 105 110
 Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu
 115 120 125
 Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn
 130 135 140
 Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly
 145 150 155 160
 Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His
 165 170 175
 Phe Leu Pro Met Val Val His Ser
 180

<210> 31
 <211> 84
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic
 primer

<400> 31
 atgtggaat ggatactgac ccactgcgct tctgctttcc cgcacctgcc gggttgctgc 60
 tgctgctgct tcctgctgct gttc 84

<210> 32
 <211> 82

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<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 32
ccggagaaac catgtcctga cccagagcct ggcaggtaac cggaacagaa gaaaccagga 60
acagcagcag gaagcagcag ca 82

<210> 33
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 33
gggtcaggac atggtttctc cggaagctac caactcttct tcttcttctt tcttcttctc 60
gtcttctgct ggtcgtcacg 80

<210> 34
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 34
ggtgaaagag aacagtttac gccaacgaac gtcaccctgc aggtggttgt aagaacgaac 60
gtgacgacca gcagaagacg g 81

<210> 35
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 35
cgttggcgta aactgttctc ttccacaaa tacttctctga aaatcgaaaa aaacggtaaa 60
gtttctggga ccaaa 75

<210> 36
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

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<400> 36
 ttttggtccca gaaacttttac cgtttttttc gatttttcag 39

<210> 37
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic primer

<400> 37
 aaaggatcca tgtggaaatg gatactgacc cactgc 36

<210> 38
 <211> 627
 <212> DNA
 <213> Escherichia coli

<220>
 <221> CDS
 <222> (1)..(627)

<400> 38
 atg tgg aaa tgg ata ctg acc cac tgc gct tct gct ttc ccg cac ctg 48
 Met Trp Lys Trp Ile Leu Thr His Cys Ala Ser Ala Phe Pro His Leu
 1 5 10 15

ccg ggt tgc tgc tgc tgc tgc ttc ctg ctg ctg ttc ctg gtt tct tct 96
 Pro Gly Cys Cys Cys Cys Cys Phe Leu Leu Leu Phe Leu Val Ser Ser
 20 25 30

gtt ccg gtt acc tgc cag gct ctg ggt cag gac atg gtt tct ccg gaa 144
 Val Pro Val Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu
 35 40 45

gct acc aac tct tcc tct tcc tct ttc tct tcc ccg act tcc gct ggt 192
 Ala Thr Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Thr Ser Ala Gly
 50 55 60

cgt cac gtt cgt tct tac aac cac ctg cag ggt gac gtt cgt tgg cgt 240
 Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg
 65 70 75 80

aaa ctg ttc tct ttc acc aaa tac ttc ctg aaa atc gaa aaa aac ggt 288
 Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly
 85 90 95

aaa gtt tct ggg acc aag aag gag aac tgc ccg tac agc atc ctg gag 336
 Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu
 100 105 110

ata aca tca gta gaa atc gga gtt gtt gcc gtc aaa gcc att aac agc 384
 Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser
 115 120 125

aac tat tac tta gcc atg aac aag aag ggg aaa ctc tat ggc tca aaa 432
 Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys
 130 135 140

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gaa ttt aac aat gac tgt aag ctg aag gag agg ata gag gaa aat gga 480
Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly
145 150 155 160

tac aat acc tat gca tca ttt aac tgg cag cat aat ggg agg caa atg 528
Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met
165 170 175

tat gtg gca ttg aat gga aaa gga gct cca agg aga gga cag aaa aca 576
Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr
180 185 190

cga agg aaa aac acc tct gct cac ttt ctt cca atg gtg gta cac tca 624
Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
195 200 205

tag 627

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<210> 39
 <211> 208
 <212> PRT
 <213> Escherichia coli

<400> 39

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Met Trp Lys Trp Ile Leu Thr His Cys Ala Ser Ala Phe Pro His Leu
1 5 10 15
Pro Gly Cys Cys Cys Cys Phe Leu Leu Leu Phe Leu Val Ser Ser
20 25 30
Val Pro Val Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu
35 40 45
Ala Thr Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Thr Ser Ala Gly
50 55 60
Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg
65 70 75 80
Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly
85 90 95
Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu
100 105 110
Ile Thr Ser Val Glu Ile Gly Val Ala Val Lys Ala Ile Asn Ser
115 120 125
Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys
130 135 140
Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly
145 150 155 160
Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met
165 170 175
Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr
180 185 190
Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
195 200 205

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<210> 40
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

-23-

<400> 40
 ttatcatgact tgtcaagctc tgggtcaaga tatggttc 38

<210> 41
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 41
 gcccagctt ccacaaacgt tgccttcc 28

<210> 42
 <211> 525
 <212> DNA
 <213> Escherichia coli

<220>
 <221> CDS
 <222> (1)..(522)

<400> 42
 atg acc tgc cag gct ctg ggt cag gac atg gtt tct ccg gaa gct acc 48
 Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr
 1 5 10 15

aac tct tcc tct tcc tct ttc tct tcc ccg tct tcc gct ggt cgt cac 96
 Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His
 20 25 30

gtt cgt tct tac aac cac ctg cag ggt gac gtt cgt tgg cgt aaa ctg 144
 Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu
 35 40 45

ttc tct ttc acc aaa tac ttc ctg aaa atc gaa aaa aac ggt aaa gtt 192
 Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
 50 55 60

tct ggg acc aag aag gag aac tgc ccg tac agc atc ctg gag ata aca 240
 Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
 65 70 75 80

tca gta gaa atc gga gtt gtt gcc gtc aaa gcc att aac agc aac tat 288
 Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
 85 90 95

tac tta gcc atg aac aag aag ggg aaa ctc tat ggc tca aaa gaa ttt 336
 Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
 100 105 110

aac aat gac tgt aag ctg aag gag agg ata gag gaa aat gga tac aat 384
 Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn
 115 120 125

acc tat gca tca ttt aac tgg cag cat aat ggg agg caa atg tat gtg 432
 Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val
 130 135 140

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gca ttg aat gga aaa gga gct cca agg aga gga cag aaa aca cga agg 480
 Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg
 145 150 155 160

aaa aac acc tct gct cac ttt ctt cca atg gtg gta cac tca tag 525
 Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 165 170

<210> 43
 <211> 174
 <212> PRT
 <213> Escherichia coli

<400> 43
 Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr
 1 5 10 15
 Asn Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His
 20 25 30
 Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu
 35 40 45
 Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
 50 55 60
 Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
 65 70 75 80
 Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
 85 90 95
 Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
 100 105 110
 Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn
 115 120 125
 Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val
 130 135 140
 Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg
 145 150 155 160
 Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 165 170

<210> 44
 <211> 45
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic
 primer

<400> 44
 tcagtgaatt cattaaagag gagaaattaa tcatgacttg ccagg

-25-

<210> 45
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 45
tcatgacttg ccaggcactg ggtcaagaca tggtttcccc ggaagcta

48

<210> 46
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 46
gcttcagcag cccatctagc gcaggctcgtc acgttcgctc ttacaacc

48

<210> 47
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 47
gttcgttggc gcaaactgtt cagctttacc aagtacttcc tgaaaatc

48

<210> 48
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 48
tcgaaaaaaaa cggtaaagtt tctgggac

28

<210> 49
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
primer

<400> 49

-26-

gatgggctgc tgaagctaga gctggagctg ttggtagctt ccggggaa

48

<210> 50
<211> 45
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

<400> 50
aacagtttgc gccaacgaac atcaccctgt aagtggttgt aagag

45

<210> 51
<211> 47
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

<400> 51
ttcttgggtcc cagaaacttt accgtttttt tcgattttca ggaagta

47

<210> 52
<211> 24
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

<400> 52
ttcttgggtcc cagaaacttt accg

24

<210> 53
<211> 45
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
primer

<400> 53
agatcaggct tctattatta tgagtgtacc accattggaa gaaag

45

<210> 54
<211> 525
<212> DNA
<213> Escherichia coli

<220>

<221> CDS

-27-

<222> (1)..(522)

<400> 54

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atg act tgc cag gca ctg ggt caa gac atg gtt tcc ccg gaa gct acc 48
Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr
  1           5           10           15

aac agc tcc agc tct agc ttc agc agc cca tct agc gca ggt cgt cac 96
Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His
          20           25           30

gtt cgc tct tac aac cac tta cag ggt gat gtt cgt tgg cgc aaa ctg 144
Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu
          35           40           45

ttc agc ttt acc aag tac ttc ctg aaa atc gaa aaa aac ggt aaa gtt 192
Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
          50           55           60

tct ggg acc aag aag gag aac tgc ccg tac agc atc ctg gag ata aca 240
Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
          65           70           75           80

tca gta gaa atc gga gtt gtt gcc gtc aaa gcc att aac agc aac tat 288
Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
          85           90           95

tac tta gcc atg aac aag aag ggg aaa ctc tat ggc tca aaa gaa ttt 336
Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
          100           105           110

aac aat gac tgt aag ctg aag gag agg ata gag gaa aat gga tac aat 384
Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn
          115           120           125

acc tat gca tca ttt aac tgg cag cat aat ggg agg caa atg tat gtg 432
Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val
          130           135           140

gca ttg aat gga aaa gga gct cca agg aga gga cag aaa aca cga agg 480
Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg
          145           150           155           160

aaa aac acc tct gct cac ttt ctt cca atg gtg gta cac tca tag 525
Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val Val His Ser
          165           170

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<210> 55

<211> 174

<212> PRT

<213> Escherichia coli

<400> 55

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Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr
  1           5           10           15

Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His
          20           25           30

Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu
          35           40           45

```

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Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
 50 55 60
 Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
 65 70 75 80
 Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
 85 90 95
 Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
 100 105 110
 Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn
 115 120 125
 Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val
 130 135 140
 Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg
 145 150 155 160
 Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 165 170

<210> 56
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 56
 ggaccctcat gacctgccag gctctgggtc aggac

35

<210> 57
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 57
 ggacagccat ggctggctgt cacgttcg

28

<210> 58
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 58
 ggacagccat ggctcgttgg cgtaaactg

29

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<210> 59
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 59
ggacagccat ggaaaaaac ggtaaagttt c 31

<210> 60
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 60
ggaccccat ggagaactgc ccgtagagc 29

<210> 61
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 61
ggaccccat ggtcaaagcc attaacagca ac 32

<210> 62
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 62
ggaccccat ggggaaactc tatggctcaa aag 33

<210> 63
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 63
ctgcccaagc ttattatgag tgtaccacca ttggaag 37

<210> 64
<211> 36

-30-

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 64

ctgcccaagc ttattacttc agcttacagt cattgt

36

<210> 65

<211> 525

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(522)

<400> 65

atg	acc	tgc	cag	gct	ctg	ggt	cag	gac	atg	ggt	tct	ccg	gaa	gct	acc	48
Met	Thr	Cys	Gln	Ala	Leu	Gly	Gln	Asp	Met	Val	Ser	Pro	Glu	Ala	Thr	
1				5					10					15		

aac	tct	tcc	tct	tcc	tct	ttc	tct	tcc	ccg	tct	tcc	gct	ggt	cgt	cac	96
Asn	Ser	Ser	Ser	Ser	Ser	Phe	Ser	Ser	Pro	Ser	Ser	Ala	Gly	Arg	His	
			20					25					30			

ggt	cgt	tct	tac	aac	cac	ctg	cag	ggt	gac	ggt	cgt	tgg	cgt	aaa	ctg	144
Val	Arg	Ser	Tyr	Asn	His	Leu	Gln	Gly	Asp	Val	Arg	Trp	Arg	Lys	Leu	
		35					40					45				

ttc	tct	ttc	acc	aaa	tac	ttc	ctg	aaa	atc	gaa	aaa	aac	ggt	aaa	gtt	192
Phe	Ser	Phe	Thr	Lys	Tyr	Phe	Leu	Lys	Ile	Glu	Lys	Asn	Gly	Lys	Val	
	50						55				60					

tct	ggg	acc	aag	aag	gag	aac	tgc	ccg	tac	agc	atc	ctg	gag	ata	aca	240
Ser	Gly	Thr	Lys	Lys	Glu	Asn	Cys	Pro	Tyr	Ser	Ile	Leu	Glu	Ile	Thr	
	65				70				75						80	

tca	gta	gaa	atc	gga	gtt	gtt	gcc	gtc	aaa	gcc	att	aac	agc	aac	tat	288
Ser	Val	Glu	Ile	Gly	Val	Val	Ala	Val	Lys	Ala	Ile	Asn	Ser	Asn	Tyr	
				85					90					95		

tac	tta	gcc	atg	aac	aag	aag	ggg	aaa	ctc	tat	ggc	tca	aaa	gaa	ttt	336
Tyr	Leu	Ala	Met	Asn	Lys	Lys	Gly	Lys	Leu	Tyr	Gly	Ser	Lys	Glu	Phe	
			100					105					110			

aac	aat	gac	tgt	aag	ctg	aag	gag	agg	ata	gag	gaa	aat	gga	tac	aat	384
Asn	Asn	Asp	Cys	Lys	Leu	Lys	Glu	Arg	Ile	Glu	Glu	Asn	Gly	Tyr	Asn	
		115					120					125				

acc	tat	gca	tca	ttt	aac	tgg	cag	cat	aat	ggg	agg	caa	atg	tat	gtg	432
Thr	Tyr	Ala	Ser	Phe	Asn	Trp	Gln	His	Asn	Gly	Arg	Gln	Met	Tyr	Val	
		130				135					140					

gca	ttg	aat	gga	aaa	gga	gct	cca	agg	aga	gga	cag	aaa	aca	cga	agg	480
Ala	Leu	Asn	Gly	Lys	Gly	Ala	Pro	Arg	Arg	Gly	Gln	Lys	Thr	Arg	Arg	
	145				150					155					160	

aaa	aac	acc	tct	gct	cac	ttt	ctt	cca	atg	gtg	gta	cac	tca	tag		525
Lys	Asn	Thr	Ser	Ala	His	Phe	Leu	Pro	Met	Val	Val	His	Ser			

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165

170

<210> 66
 <211> 174
 <212> PRT
 <213> Homo sapiens

<400> 66
 Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr
 1 5 10 15
 Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His
 20 25 30
 Val Arg Ser Thr Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu
 35 40 45
 Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
 50 55 60
 Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
 65 70 75 80
 Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
 85 90 95
 Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
 100 105 110
 Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn
 115 120 125
 Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val
 130 135 140
 Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg
 145 150 155 160
 Lys Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 165 170

<210> 67
 <211> 444
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(444)

<400> 67
 atg gct ggt cgt cac gtt cgt tct tac aac cac ctg cag ggt gac gtt 48
 Met Ala Gly Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val
 1 5 10 15
 cgt tgg cgt aaa ctg ttc tct ttc acc aaa tac ttc ctg aaa atc gaa 96
 Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu
 20 25 30

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aaa aac ggt aaa gtt tct ggg acc aag aag gag aac tgc ccg tac agc 144
Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser
      35      40      45

atc ctg gag ata aca tca gta gaa atc gga gtt gtt gcc gtc aaa gcc 192
Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala
      50      55      60

att aac agc aac tat tac tta gcc atg aac aag aag ggg aaa ctc tat 240
Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr
      65      70      75      80

ggc tca aaa gaa ttt aac aat gac tgt aag ctg aag gag agg ata gag 288
Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu
      85      90      95

gaa aat gga tac aat acc tat gca tca ttt aac tgg cag cat aat ggg 336
Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly
      100      105      110

agg caa atg tat gtg gca ttg aat gga aaa gga gct cca agg aga gga 384
Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly
      115      120      125

cag aaa aca cga agg aaa aac acc tct gct cac ttt ctt cca atg gtg 432
Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val
      130      135      140

gta cac tca tag 444
Val His Ser
145

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<210> 68
 <211> 147
 <212> PRT
 <213> Homo sapiens

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<400> 68
Met Ala Gly Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val
 1      5      10      15
Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu
      20      25      30
Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser
      35      40      45
Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala
      50      55      60
Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr
      65      70      75      80
Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu
      85      90      95
Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His Asn Gly
      100      105      110
Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly
      115      120      125
Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro Met Val
      130      135      140
Val His Ser
145

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<210> 69
 <211> 402
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(402)

<400> 69
 atg gtt cgt tgg cgt aaa ctg ttc tct ttc acc aaa tac ttc ctg aaa 48
 Met Val Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys
 1 5 10 15
 atc gaa aaa aac ggt aaa gtt tct ggg acc aag aag gag aac tgc ccg 96
 Ile Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro
 20 25 30
 tac agc atc ctg gag ata aca tca gta gaa atc gga gtt gtt gcc gtc 144
 Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val
 35 40 45
 aaa gcc att aac agc aac tat tac tta gcc atg aac aag aag ggg aaa 192
 Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys
 50 55 60
 ctc tat ggc tca aaa gaa ttt aac aat gac tgt aag ctg aag gag agg 240
 Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg
 65 70 75 80
 ata gag gaa aat gga tac aat acc tat gca tca ttt aac tgg cag cat 288
 Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His
 85 90 95
 aat ggg agg caa atg tat gtg gca ttg aat gga aaa gga gct cca agg 336
 Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg
 100 105 110
 aga gga cag aaa aca cga agg aaa aac acc tct gct cac ttt ctt cca 384
 Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro
 115 120 125
 atg gtg gta cac tca tag 402
 Met Val Val His Ser
 130

<210> 70
 <211> 133
 <212> PRT
 <213> Homo sapiens

<400> 70
 Met Val Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys
 1 5 10 15
 Ile Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro
 20 25 30
 Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val
 35 40 45
 Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys
 50 55 60
 Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg

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```

      65              70              75              80
Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His
      85              90              95
Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg
      100             105             110
Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro
      115             120             125
Met Val Val His Ser
      130

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<210> 71
 <211> 354
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(354)

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<400> 71
atg gaa aaa aac ggt aaa gtt tct ggg acc aag aag gag aac tgc ccg 48
Met Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro
      1              5              10              15

tac agc atc ctg gag ata aca tca gta gaa atc gga gtt gtt gcc gtc 96
Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val
      20              25              30

aaa gcc att aac agc aac tat tac tta gcc atg aac aag aag ggg aaa 144
Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys
      35              40              45

ctc tat ggc tca aaa gaa ttt aac aat gac tgt aag ctg aag gag agg 192
Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys Glu Arg
      50              55              60

ata gag gaa aat gga tac aat acc tat gca tca ttt aac tgg cag cat 240
Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp Gln His
      65              70              75              80

aat ggg'agg caa atg tat gtg gca ttg aat gga aaa gga gct cca agg 288
Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala Pro Arg
      85              90              95

aga gga cag aaa aca cga agg aaa aac acc tct gct cac ttt ctt cca 336
Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe Leu Pro
      100             105             110

atg gtg gta cac tca tag 354
Met Val Val His Ser
      115

```

<210> 72
 <211> 117
 <212> PRT
 <213> Homo sapiens

<400> 72
 Met Glu Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro

1					5					10					15				
Tyr	Ser	Ile	Leu	Glu	Ile	Thr	Ser	Val	Glu	Ile	Gly	Val	Val	Ala	Val				
				20					25					30					
Lys	Ala	Ile	Asn	Ser	Asn	Tyr	Tyr	Leu	Ala	Met	Asn	Lys	Lys	Gly	Lys				
				35					40					45					
Leu	Tyr	Gly	Ser	Lys	Glu	Phe	Asn	Asn	Asp	Cys	Lys	Leu	Lys	Glu	Arg				
				50					55					60					
Ile	Glu	Glu	Asn	Gly	Tyr	Asn	Thr	Tyr	Ala	Ser	Phe	Asn	Trp	Gln	His				
				65					70					75					
Asn	Gly	Arg	Gln	Met	Tyr	Val	Ala	Leu	Asn	Gly	Lys	Gly	Ala	Pro	Arg				
				85					90					95					
Arg	Gly	Gln	Lys	Thr	Arg	Arg	Lys	Asn	Thr	Ser	Ala	His	Phe	Leu	Pro				
				100					105					110					
Met	Val	Val	His	Ser															
				115															

```
<220>  
<221> CDS  
<222> (1)..(321)
```

```
<210> 74
<211> 106
<212> PRT
<213> Homo sapiens
```

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<400> 74

```

Met Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu Ile
 1          5          10          15
Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met
          20          25          30
Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys
 35          40          45
Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser
 50          55          60
Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly
 65          70          75          80
Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser
          85          90          95
Ala His Phe Leu Pro Met Val Val His Ser
          100          105

```

<210> 75

<211> 264

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(261)

<400> 75

```

atg gtc aaa gcc att aac agc aac tat tac tta gcc atg aac aag aag      48
Met Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys
 1          5          10          15

ggg aaa ctc tat ggc tca aaa gaa ttt aac aat gac tgt aag ctg aag      96
Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys
          20          25          30

gag agg ata gag gaa aat gga tac aat acc tat gca tca ttt aac tgg      144
Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp
          35          40          45

cag cat aat ggg agg caa atg tat gtg gca ttg aat gga aaa gga gct      192
Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala
          50          55          60

cca agg aga gga cag aaa aca cga agg aaa aac acc tct gct cac ttt      240
Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe
 65          70          75          80

ctt cca atg gtg gta cac tca tag      264
Leu Pro Met Val Val His Ser
          85

```

<210> 76

<211> 87

<212> PRT

<213> Homo sapiens

<400> 76

```

Met Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys
 1          5          10          15

```

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Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys
 20 25 30
 Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn Trp
 35 40 45
 Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly Ala
 50 55 60
 Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His Phe
 65 70 75 80
 Leu Pro Met Val Val His Ser
 85

<210> 77
 <211> 219
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(219)

<400> 77
 atg ggg aaa ctc tat ggc tca aaa gaa ttt aac aat gac tgt aag ctg 48
 Met Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu
 1 5 10 15
 aag gag agg ata gag gaa aat gga tac aat acc tat gca tca ttt aac 96
 Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn
 20 25 30
 tgg cag cat aat ggg agg caa atg tat gtg gca ttg aat gga aaa gga 144
 Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly
 35 40 45
 gct cca agg aga gga cag aaa aca cga agg aaa aac acc tct gct cac 192
 Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His
 50 55 60
 ttt ctt cca atg gtg gta cac tca tag 219
 Phe Leu Pro Met Val Val His Ser
 65 70

<210> 78
 <211> 72
 <212> PRT
 <213> Homo sapiens

<400> 78
 Met Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu
 1 5 10 15
 Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala Ser Phe Asn
 20 25 30
 Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn Gly Lys Gly
 35 40 45
 Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr Ser Ala His
 50 55 60

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Phe Leu Pro Met Val Val His Ser
65 70

<210> 79
<211> 357
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(357)

<400> 79
atg acc tgc cag gct ctg ggt cag gac atg gtt tct ccg gaa gct acc 48
Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr
1 5 10 15
aac tct tcc tct tcc tct ttc tct tcc ccg tct tcc gct ggt cgt cac 96
Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His
20 25 30
gtt cgt tct tac aac cac ctg cag ggt gac gtt cgt tgg cgt aaa ctg 144
Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu
35 40 45
ttc tct ttc acc aaa tac ttc ctg aaa atc gaa aaa aac ggt aaa gtt 192
Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
50 55 60
tct ggg acc aag aag gag aac tgc ccg tac agc atc ctg gag ata aca 240
Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
65 70 75 80
tca gta gaa atc gga gtt gtt gcc gtc aaa gcc att aac agc aac tat 288
Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
85 90 95
tac tta gcc atg aac aag aag ggg aaa ctc tat ggc tca aaa gaa ttt 336
Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
100 105 110
aac aat gac tgt aag ctg aag 357
Asn Asn Asp Cys Lys Leu Lys
115

<210> 80
<211> 119
<212> PRT
<213> Homo sapiens

<400> 80
Met Thr Cys Gln Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr
1 5 10 15
Asn Ser Ser Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His
20 25 30
Val Arg Ser Tyr Asn His L u Gln Gly Asp Val Arg Trp Arg Lys Leu
35 40 45

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Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val
 50 55 60
 Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr
 65 70 75 80
 Ser Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr
 85 90 95
 Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe
 100 105 110
 Asn Asn Asp Cys Lys Leu Lys
 115

<210> 81
 <211> 276
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(276)

<400> 81
 atg gct ggt cgt cac gtt cgt tct tac aac cac ctg cag ggt gac gtt 48
 Met Ala Gly Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val
 1 5 10 15
 cgt tgg cgt aaa ctg ttc tct ttc acc aaa tac ttc ctg aaa atc gaa 96
 Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu
 20 25 30
 aaa aac ggt aaa gtt tct ggg acc aag aag gag aac tgc ccg tac agc 144
 Lys Asn Gly Lys Val Ser Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser
 35 40 45
 atc ctg gag ata aca tca gta gaa atc gga gtt gtt gcc gtc aaa gcc 192
 Ile Leu Glu Ile Thr Ser Val Glu Ile Gly Val Val Ala Val Lys Ala
 50 55 60
 att aac agc aac tat tac tta gcc atg aac aag aag ggg aaa ctc tat 240
 Ile Asn Ser Asn Tyr Tyr Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr
 65 70 75 80
 ggc tca aaa gaa ttt aac aat gac tgt aag ctg aag 276
 Gly Ser Lys Glu Phe Asn Asn Asp Cys Lys Leu Lys
 85 90

<210> 82
 <211> 92
 <212> PRT
 <213> Homo sapiens

<400> 82
 Met Ala Gly Arg His Val Arg Ser Tyr Asn His Leu Gln Gly Asp Val
 1 5 10 15
 Arg Trp Arg Lys Leu Phe Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu

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	20		25		30
Lys Asn Gly	Lys Val Ser Gly Thr	Lys Lys Glu Asn Cys	Pro Tyr Ser		
35	40	45			
Ile Leu Glu	Ile Thr Ser Val Glu Ile Gly Val	Val Ala Val Lys Ala			
50	55	60			
Ile Asn Ser	Asn Tyr Tyr Leu Ala Met Asn Lys	Lys Gly Lys Leu Tyr			
65	70	75	80		
Gly Ser Lys	Glu Phe Asn Asn Asp Cys Lys Leu Lys				
	85	90			

<210> 83
 <211> 525
 <212> DNA
 <213> Homo sapiens

<400> 83
 atgacctctc aggcctctggg tcaggacatg gtttctccgg aagctaccaa ctcttctct 60
 tcctctttct cttccccgtc ttccgctggt cgtcacgttc gttcttacia ccacctgcag 120
 ggtgacgttc gttggcgtaa actgttctct ttcaccaa atcttctgaa aatcgaaaaa 180
 aacggtaaaag tttctgggac caagaaggag aactctccgt acagcatcct ggagataaca 240
 tcagtagaaa tccgagttgt tgccgtcaaa gccattaaca gcaactatta cttagccatg 300
 aacaagaagg ggaactcta tggctcaaaa gaatttaaca atgactgtaa gctgaaggag 360
 aggatagagg aaaatggata caatacctat gcatcattta actggcagca taatgggagg 420
 caaatgtatg tggcattgaa tggaaaagga gctccaagga gaggacagaa aacacgaagg 480
 aaaaacacct ctgctcactt tcttccaatg gtggtacact catag 525

<210> 84
 <211> 525
 <212> DNA
 <213> Homo sapiens

<400> 84
 atgacctgcc aggcctctggg tcaggacatg gtttctccgg aagctaccaa ctcttctct 60
 tcctctttct cttccccgtc ttccgctggt cgtcacgttc gttcttacia ccacctgcag 120
 ggtgacgttc gttggcgtaa actgttctct ttcaccaa atcttctgaa aatcgaaaaa 180
 aacggtaaaag tttctgggac caagaaggag aactctccgt acagcatcct ggagataaca 240
 tcagtagaaa tccgagttgt tgccgtcaaa gccattaaca gcaactatta cttagccatg 300
 aacaagaagg ggaactcta tggctcaaaa gaatttaaca atgactgtaa gctgaaggag 360
 aggatagagg aaaatggata caatacctat gcatcattta actggcagca taatgggagg 420
 caaatgtatg tggcattgaa tggaaaagga gctccaagga gaggacagaa aacacgaagg 480
 aaaaacacct ctgctcactt tcttccaatg gtggtacact catag 525

<210> 85
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 85
 ggacctcat gacctctcag gctctgggt

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<210> 86
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 86
aaggagaact ctccgtacag c 21

<210> 87
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 87
gctgtacggt ctgttctcct t 21

<210> 88
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 88
ggaccctcat gacctgccag gctctgggtc aggac 35

<210> 89
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 89
ctgcccgaagc ttattatgag tgtaccacca ttggaag 37

<210> 90
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 90
aaaggatcct gccaggctct gggtcaggac atg 33

<210> 91
<211> 32

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<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 91

gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 92

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 92

gggcccaagc ttatgagtgt accaccat

28

<210> 93

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 93

ccggcggatc ccatatgtct tacaaccacc tgcagg

36

<210> 94

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 94

ccggcggtac cttattatga gtgtaccacc attgg

35

<210> 95

<211> 426

<212> DNA

<213> Homo sapiens

<400> 95

atgtctttaca accacctgca ggggtgacgtt cggtggcgta aactgttctc tttcaccaaa 60
tacttcctga aaatcgaaaa aaacggtaaa gtttctggga ccaagaagga gaactgcccg 120
tacagcatcc tggagataac atcagtagaa atcggagttg ttgccgtcaa agccattaac 180
agcaactatt acttagccat gaacaagaag gggaaactct atggctcaaa agaatttaac 240
aatgactgta agctgaagga gaggatagag gaaaatggat acaataccta tgcattcattt 300
aactggcagc ataatgggag gcaaattgtat gtggcattga atggaaaagg agctccaagg 360
agaggacaga aaacacgaag gaaaaacacc tctgctcact ttcttccaat ggtggtacac 420
tcataa 426

```
<210> 96
<211> 141
<212> PRT
<213> Homo sapiens
```

```
<210> 97
<211> 20
<212> DNA
<213> Artificial Sequence
```

<400> 97
caaccacctg caggggtgacg

```
<210> 98
<211> 78
<212> DNA
<213> Artificial Sequence
```

```
<400> 98
aacggctcgac aaatgtatgt ggcaactgaac ggtaaagggtg ctccacgctg tggtcagaaa 60
accgcgctgta aaaacacc                                     78
```

<210> 99

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<211> 76
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 99
gggcccaagc ttaagagtgt accaccattg gcagaaagtg agcagaggtg tttttacgac 60
gggttttctg accacg 76

<210> 100
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 100
gccacataca tttgtcgacc gtt 23

<210> 101
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 101
gggcccaagc ttaagagtg 19

<210> 102
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 102
gccacataca tttgtcgacc gtt 23

<210> 103
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 103

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ctgcagggtg acgttcggtg gcgtaaactg ttctccttca ccaaatactt cctgaaaatc 60
gaaaaaaacg gtaaagtttc tggtagcaag 90

<210> 104
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 104
agctttaaca gcaacaacac cgatttcaac ggagggtgatt tccaggatgg agtacgggca 60
gttttctttc ttggtaccag aaactttacc 90

<210> 105
<211> 90
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 105
ggtgttggtg ctgttaaagc tatcaactcc aactactacc tggctatgaa caagaaaggc 60
aaactgtacg gttccaaaga atttaacaac 90

<210> 106
<211> 100
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 106
gtcgaccgtt gtgctgccag ttgaaggaag cgtaggtgtt gtaaccgttt tcttcgatac 60
gtttctttcag tttacagtcg ttgttaaatt ctttggaacc 100

<210> 107
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
oligonucleotide

<400> 107
gcggcgtcga ccgttgctgct gccag 25

<210> 108
<211> 26
<212> DNA

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<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
oligonucleotide

<400> 108

gcggcctgca gggtgacgtt cgttgg

26

<210> 109

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
oligonucleotide

<400> 109

ccggcggatc ccatatgtct tacaaccacc tgcagg

36

<210> 110

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:
oligonucleotide

<400> 110

cgcgcgatat cttattaaga gtgtaccacc attg

34

<210> 111

<211> 426

<212> DNA

<213> Homo sapiens

<400> 111

atgtcttaca	accacctgca	gggtgacgtt	cgttggcgta	aactgttctc	cttcaccaa	60
tacttcctga	aaatcgaaaa	aaacggtaaa	gtttctggta	ccaagaaaga	aaactgccc	120
tactccatcc	tggaaatcac	ctccggtgaa	atcggtgttg	ttgctgttaa	agctatcaac	180
tccaactact	acctggctat	gaacaagaaa	ggtaaactgt	acggttccaa	agaatttaac	240
aacgactgta	aactgaaaga	acgtatcgaa	gaaaacggtt	acaacaccta	cgcttccttc	300
aactggcagc	acaacggctg	acaaatgtat	gtggcactga	acggtaaagg	tgctccacgt	360
cgtggtcaga	aaaccgcgtg	taaaaacacc	tctgctcact	ttctgccaat	ggtggtacac	420
tcttaa						426

<210> 112

<211> 141

<212> PRT

<213> Homo sapiens

<400> 112

Met	Ser	Tyr	Asn	His	Leu	Gln	Gly	Asp	Val	Arg	Trp	Arg	Lys	Leu	Phe
1					5				10					15	

Ser	Phe	Thr	Lys	Tyr	Phe	Leu	Lys	Ile	Glu	Lys	Asn	Gly	Lys	Val	Ser
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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	20		25		30
Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser					
	35		40		45
Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr					
	50		55		60
Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn					
	65		70		75
Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr					
		85		90	95
Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala					
	100		105		110
Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys					
	115		120		125
Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser					
	130		135		140

<210> 113
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 oligonucleotide

<400> 113
 cgcgcccatg gctctgggtc aggacatg

28

<210> 114
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:
 oligonucleotide

<400> 114
 gggcccaagc ttatgagtgt accaccat

28

<210> 115
 <211> 516
 <212> DNA
 <213> Homo sapiens

<400> 115
 atggctctgg gtcaagatat ggtttctccg gaagctacca actcttcctc ttcctctttc 60
 tcttccccgt cttccgctgg tcgtcacggt cgttcttaca accacctgca gggtagcgtt 120
 cgttggcgta aactgttctc tttcaccaaa tacttcctga aaatcgaaaa aaacggtaaa 180
 gtttctggga ccaagaagga gaactgcccg tacagcatcc tggagataac atcagtagaa 240
 atcggagtgt ttgccgtcaa agccattaac agcaactatt acttagccat gaacaagaag 300
 gggaaactct atggctcaaa agaatttaac aatgactgta agctgaagga gaggatagag 360

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gaaaatggat acaataccta tgcattcattt aactggcagc ataatgggag gcaaatgtat 420
 gtggcattga atggaaaagg agctccaagg agaggacaga aaacacgaag gaaaaacacc 480
 tctgctcact ttcttccaat ggtggtacac tcataa 516

<210> 116
 <211> 171
 <212> PRT
 <213> Homo sapiens

<400> 116
 Met Ala Leu Gly Gln Asp Met Val Ser Pro Glu Ala Thr Asn Ser Ser
 1 5 10 15
 Ser Ser Ser Phe Ser Ser Pro Ser Ser Ala Gly Arg His Val Arg Ser
 20 25 30
 Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe Ser Phe
 35 40 45
 Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser Gly Thr
 50 55 60
 Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser Val Glu
 65 70 75 80
 Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu Ala
 85 90 95
 Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn Asp
 100 105 110
 Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr Ala
 115 120 125
 Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu Asn
 130 135 140
 Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys Asn Thr
 145 150 155 160
 Ser Ala His Phe Leu Pro Met Val Val His Ser
 165 170

<210> 117
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 117
 gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 118
 <211> 75
 <212> DNA
 <213> Artificial Sequence

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<220>

<223> Description of Artificial Sequence: primer

<400> 118

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ctgccaagc ttttatgagt gtaccacat tggaagaaag tgagcagagg tgtttttttc 60
tcgtgttttc tgtcc 75

```

<210> 119

<211> 426

<212> DNA

<213> Homo sapiens

<400> 119

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atgtcttaca accacctgca gggtgacgtt cggtggcgta aactgttctc tttcaccaaa 60
tacttcctga aaatcgaaaa aaacggtaaa gtttctggga ccaagaagga gaactgcccg 120
tacagcatcc tggagataac atcagtagaa atcggagttg ttgccgtcaa agccattaac 180
agcaactatt acttagccat gaacaagaag gggaaactct atgggtcaaa agaatttaac 240
aatgactgta agctgaagga gaggatagag gaaaatggat acaataccta tgcattcatt 300
aactggcagc ataatgggag gcaaatgtat gtggcattga atggaaaagg agctccaagg 360
agaggacaga aaacacgaga aaaaaacacc tctgctcact ttcttccaat ggtgggtacac 426
tcatag

```

<210> 120

<211> 141

<212> PRT

<213> Homo sapiens

<400> 120

```

Met Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe
  1              5              10              15

Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser
      20              25              30

Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser
      35              40              45

Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr
      50              55              60

Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn
      65              70              75              80

Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr
      85              90              95

Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala
      100             105             110

Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Glu Lys
      115             120             125

Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
      130             135             140

```

<210> 121

<211> 32

<212> DNA

<213> Artificial Sequence

-50-

<220>

<223> Description of Artificial Sequence: primer

<400> 121

gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 122

<211> 75

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 122

ctgccaagc ttttatgagt gtaccacat tggaagaaag tgagcagagg tgtttttctg 60
tcgtgttttc tgtcc 75

<210> 123

<211> 426

<212> DNA

<213> Homo sapiens

<400> 123

atgtcttaca	accacctgca	gggtgacgtt	cgttggcgta	aactgttctc	tttcaccaaa	60
tacttcctga	aaatcgaaaa	aaacggtaaa	gtttctggga	ccaagaagga	gaactgcccg	120
tacagcatcc	tgagataac	atcagtagaa	atcggagttg	ttgccgtcaa	agccattaac	180
agcaactatt	acttagccat	gaacaagaag	gggaaactct	atggctcaaa	agaatttaac	240
aatgactgta	agctgaagga	gaggatagag	gaaaatggat	acaataccta	tgcatcattt	300
aactggcagc	ataatgggag	gcaaattgtat	gtggcattga	atggaaaagg	agctccaagg	360
agaggacaga	aaacacgaca	gaaaaacacc	tctgctcact	ttcttccaat	ggtggtacac	420
tcatag						426

<210> 124

<211> 141

<212> PRT

<213> Homo sapiens

<400> 124

Met	Ser	Tyr	Asn	His	Leu	Gln	Gly	Asp	Val	Arg	Trp	Arg	Lys	Leu	Phe
1				5					10					15	
Ser	Phe	Thr	Lys	Tyr	Phe	Leu	Lys	Ile	Glu	Lys	Asn	Gly	Lys	Val	Ser
			20					25					30		
Gly	Thr	Lys	Lys	Glu	Asn	Cys	Pro	Tyr	Ser	Ile	Leu	Glu	Ile	Thr	Ser
		35					40					45			
Val	Glu	Ile	Gly	Val	Val	Ala	Val	Lys	Ala	Ile	Asn	Ser	Asn	Tyr	Tyr
		50				55					60				
Leu	Ala	Met	Asn	Lys	Lys	Gly	Lys	Leu	Tyr	Gly	Ser	Lys	Glu	Phe	Asn
65					70					75					80
Asn	Asp	Cys	Lys	Leu	Lys	Glu	Arg	Ile	Glu	Glu	Asn	Gly	Tyr	Asn	Thr
			85						90					95	
Tyr	Ala	Ser	Phe	Asn	Trp	Gln	His	Asn	Gly	Arg	Gln	Met	Tyr	Val	Ala
			100					105						110	

Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Gln Lys
115 120 125

Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
130 135 140

<220>
<223> Description of Artificial Sequence: primer

<220>
<223> Description of Artificial Sequence: primer

<400> 127						
atgtcttaca	accacctgca	gggtgacgtt	cgttggcgta	aactgtttctc	tttcaccaa	60
tacttcctga	aaatcgaaaa	aaacggttaa	gtttcttgga	ccaagaagga	gaactgccg	120
tacagcatcc	tggagataac	atcagtagaa	atcggagtgt	tggcgtcaa	agccattaac	180
agcaactatt	acttagccat	gaacaagaag	gggaaactct	atgggtcaaa	agaatttaac	240
aatgactgta	agctgaagga	gaggatagag	gaaaatggat	acaataccta	tgcatcattt	300
aactggcagc	ataatgggag	gcaaattgat	gtggcattga	atggaaaagg	agctccaagg	360
agaggacagg	aaacacgaag	gaaaaacacc	tctgctcact	ttcttccaat	ggtggtacac	420
tcagatag						426

<400> 128
Met Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe
1 5 10 15

Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser
20 25 30

Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser
35 40 45

-52-

Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr
 50 55 60
 Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn
 65 70 75 80
 Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr
 85 90 95
 Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala
 100 105 110
 Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Glu Thr Arg Arg Lys
 115 120 125
 Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
 130 135 140

<210> 129
 <211> 32
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 129
 gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 130
 <211> 84
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 130
 ctgcccgaag ttttatgagt gtaccaccat tggaagaaag tgagcagagg tgtttttcct
 tcgtgtctgc tgcctctcc ttgg

33
34

<210> 131
 <211> 426
 <212> DNA
 <213> Homo sapiens

<400> 131
 atgtctttaca accacctgca ggggtgacgtt cgttggcgta aactgtttctc tttcaccaaa 60
 tactttctga aaatcgaaaa aaacggtaaa gtttctggga ccaagaagga gaactgcccg 120
 tacagcatcc tggagataac atcagtagaa atcgagattg ttgccgtcaa agccattaac 180
 agcaactatt acttagccat gaacaagaag gggaaactct atggctcaa agaatttaac 240
 aatgactgta agctgaagga gaggatagag gaaaatggat acaataccta tgcattcatt 300
 aactggcagc ataatgggag gcaaatgtat gtggcattga atggaaaagg agtccaagg 360
 agaggacagc agacacgaag gaaaaacacc tctgctcact ttcttccaat ggtggtacac 420
 tcatag 426

<210> 132
 <211> 141

-53-

<212> PRT

<213> Homo sapiens

<400> 132

```

Met Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe
 1           5           10           15

Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser
          20           25           30

Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser
          35           40           45

Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr
          50           55           60

Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn
 65           70           75           80

Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr
          85           90           95

Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala
          100          105          110

Leu Asn Gly Lys Gly Ala Pro Arg Arg Gly Gln Gln Thr Arg Arg Lys
          115          120          125

Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
          130          135          140

```

<210> 133

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 133

gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 134

<211> 93

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 134

```

ctgccaagc ttttatgagt gtaccacat tggaagaaag tgagcagagg tgtttttctt 60
tcgtgttttc tgccttccc ttggagctcc ttt                               93

```

<210> 135

<211> 426

<212> DNA

<213> Homo sapiens

-54-

```

<400> 135
atgtcttaca accacctgca ggggtgacgtt cgttggcgta aactgtttctc tttcaccaaa 60
tacttcctga aaatcgaaaa aaacggtaaa gtttctggga ccaagaagga gaactgcccg 120
tacagcatcc tggagataac atcagtagaa atcggagttg ttgccgtcaa agccattaac 180
agcaactatt acttagccat gaacaagaag gggaaaactct atgggtcaaa agaatttaac 240
aatgactgta agctgaagga gaggatagag gaaaatggat acaataccta tgcattcatt 300
aactggcagc ataatgggag gcaaatgtat gtggcattga atggaaaagg agctccaagg 360
gaaggacaga aaacacgaag gaaaaacacc tctgctcact ttcttccaat ggtggtacac 420
tcatag

```

```

<210> 136
<211> 140
<212> PRT
<213> Homo sapiens

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```

<400> 136
Met Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe Ser
 1           5           10           15
Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser Gly
      20           25           30
Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser Val
      35           40           45
Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr Leu
      50           55           60
Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn Asn
      65           70           75           80
Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr Tyr
      85           90           95
Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala Leu
      100          105          110
Asn Gly Lys Gly Ala Pro Arg Glu Gly Gln Lys Thr Arg Arg Lys Asn
      115          120          125
Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
      130          135          140

```

```

<210> 137
<211> 32
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> Description of Artificial Sequence: primer

```

```

<400> 137
gcggcacatg tcttacaacc acctgcaggg tg

```

32

```

<210> 138
<211> 93
<212> DNA
<213> Artificial Sequence

```

-55-

<220>

<223> Description of Artificial Sequence: primer

<400> 138

```

ctgccaagc ttttatgagt gtaccacat tggaagaaag tgagcagagg tgtttttcct 60
tcgtgttttc tgcctgcc ttggagctcc ttt 93

```

<210> 139

<211> 426

<212> DNA

<213> Homo sapiens

<400> 139

```

atgtcttaca accacctgca gggtagcgtt cgttggcgta aactgttctc tttcaccaaa 60
tacttcctga aaatcgaaaa aaacggtaaa gtttctggga ccaagaagga gaactgccc 120
tacagcatcc tggagataac atcagtagaa atcggagttg ttgccgtcaa agccattaac 180
agcaactatt acttagccat gaacaagaag gggaaactct atggctcaaa agaatttaac 240
aatgactgta agctgaagga gaggatagag gaaaatggat acaataccta tgcattcatt 300
aactggcagc ataatgggag gcaaatgtat gtggcattga atggaaaagg agctccaagg 360
cagggacaga aaacacgaag gaaaaacacc tctgctcact ttcttccaat ggtggtacac 420
tcatag 426

```

<210> 140

<211> 141

<212> PRT

<213> Homo sapiens

<400> 140

```

Met Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe
  1           5           10           15
Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser
          20          25          30
Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser
          35          40          45
Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr
          50          55          60
Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn
          65          70          75          80
Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr
          85          90          95
Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala
          100         105         110
Leu Asn Gly Lys Gly Ala Pro Arg Gln Gly Gln Lys Thr Arg Arg Lys
          115         120         125
Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
          130         135         140

```

<210> 141

<211> 32

<212> DNA

<213> Artificial Sequence

-56-

<220>

<223> Description of Artificial Sequence: primer

<400> 141

gcggcacatg tcttacaacc acctgcaggg tg

32

<210> 142

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 142

ttgaatggag aaggagctcc a

21

<210> 143

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 143

tggagctcct tctccattca a

21

<210> 144

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 144

ctgcccgaagc ttttatgagt gtaccacatc tgg

33

<210> 145

<211> 426

<212> DNA

<213> Homo sapiens

<400> 145

atgtcttaca	accacctgca	gggtgacgtt	cgttggcgta	aactgttctc	tttcacaaa	60
tacttcctga	aaatcgaaaa	aaacggtaaa	gtttctggga	ccaagaagga	gaactgccc	120
tacagcatcc	tgagataaac	atcagtagaa	atcggagtgt	ttgccgtcaa	agccattaac	180
agcaactatt	acttagccat	gaacaagaag	gggaaactct	atgggtcaaa	agaatttaac	240
aatgactgta	agctgaagga	gaggatagag	gaaaatggat	acaataccta	tgcattcatt	300
aactggcagc	ataatgggag	gcaaatgtat	gtggcattga	atggagaagg	agctccaagg	360
agaggacaga	aaacacgaag	gaaaaacacc	tctgctcact	ttcttccaat	ggtggtacac	420
tcatag						426

<210> 146

<211> 141

<212> PRT

-57-

<213> Homo sapiens

<400> 146

```

Met Ser Tyr Asn His Leu Gln Gly Asp Val Arg Trp Arg Lys Leu Phe
 1           5           10           15

Ser Phe Thr Lys Tyr Phe Leu Lys Ile Glu Lys Asn Gly Lys Val Ser
          20           25           30

Gly Thr Lys Lys Glu Asn Cys Pro Tyr Ser Ile Leu Glu Ile Thr Ser
          35           40           45

Val Glu Ile Gly Val Val Ala Val Lys Ala Ile Asn Ser Asn Tyr Tyr
          50           55           60

Leu Ala Met Asn Lys Lys Gly Lys Leu Tyr Gly Ser Lys Glu Phe Asn
 65           70           75           80

Asn Asp Cys Lys Leu Lys Glu Arg Ile Glu Glu Asn Gly Tyr Asn Thr
          85           90           95

Tyr Ala Ser Phe Asn Trp Gln His Asn Gly Arg Gln Met Tyr Val Ala
          100          105          110

Leu Asn Gly Glu Gly Ala Pro Arg Arg Gly Gln Lys Thr Arg Arg Lys
          115          120          125

Asn Thr Ser Ala His Phe Leu Pro Met Val Val His Ser
          130          135          140

```

<210> 147

<211> 3974

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: pHE4-5 vector

<400> 147

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ggtacctaag tgagtagggc gtccgatcga cggacgcctt ttttttgaat tcgtaatcat 60
ggtcatagct gtttcctgtg tgaaattggt atccgctcac aattccacac aacatacgag 120
ccggaagcat aaagtgtaaa gcctgggggtg cctaagtagt gagctaactc acattaattg 180
cgttgcgctc actgcccgtt ttccagtggg gaaacctgtc gtgccagctg cattaatgaa 240
tcggccaacg cgcggggaga ggcggtttgc gtattgggag ctcttcgctc tctcgcgtca 300
ctgactcgct gcgctcggtc gttcggctgc ggcgagcggg atcagctcac tcaaaggcgg 360
taatacggtt atccacagaa tcaggggata acgcaggaaa gaacatgtga gcaaaaggcc 420
agcaaaaggc caggaaccgt aaaaaggccg cgttgctggc gtttttccat aggctccgcc 480
cccctgacga gcatcacaaa aatcgacgct caagtcagag gtggcgaaac ccgacaggac 540
tataaagata ccaggcggtt cccctggaa gctccctcgt gcgctctcct gttccgacct 600
tgccgcttac cggataacct tccgccttcc tcccttcggg aagcggtggc ctttctcata 660
gtcacgctg taggtatctc agttcggtgt aggtcggtcg ctccaagctg ggctgtgtgc 720
acgaaccccc cgttcagccc gaccgctgcg ccttatccgg taactatcgt cttgagtcca 780
acccggtaag acacgactta tcgccactgg cagcagccac tggtaacagg attagcagag 840
cgaggatatg aggcggtgct acagagtctc tgaagtgtgt gcctaactac ggctacacta 900
gaagaacagt atttggtatc tgcgctctgc tgaagccagt taccttcgga aaaagagttg 960
gtagctcttg atccggcaaa caaaccaccg ctggttagcg tggttttttt gtttgcaagc 1020
agcagattac gcgcagaaaa aaaggatctc aagaagatcc tttgatcttt tctacggggg 1080
ctgacgctca gtggaacgaa aactcacgtt aagggtattt ggtcatgaga ttatcgtcga 1140
caattcgcgc gcgaaggcga agcggcatgc atttacgttg acaccatcga atggtgcaaa 1200
acctttcgcg gtatggcatg atagcgcggc gaagagagtc aattcagggg ggtgaatgtg 1260
aaaccagtaa cgttatacga tgctgcagag tatgccgggt tctcttatca gaccgtttcc 1320

```


-58-

```

cgcggtggtga accaggccag ccacgtttct gcgaaaaacgc gggaaaaaagt ggaagcggcg 1350
atggcgggagc tgaattacat tcccaaccgc gtggcacaac aactggcggg caaacagtcg 1440
ttgctgattg gcgttgccac ctccagtcg gccctgcacg cgccgtcgca aattgtcgcg 1500
gcgattaaat ctgcgcgcga tcaactgggt gccagcgtgg tgggtgcgat ggtagaacga 1560
agcggcgctg aagcctgtaa agcggcggtg cacaatcttc tcgcgcaacg cgtcagtggt 1620
ctgatcatta actatccgct ggatgaccag gatgccattg ctgtggaagc tgcctgcact 1680
aatgttccgg cgttattttct tgatgtctct gaccagacac ccatcaacag tattattttc 1740
tcccatgaag acggtacgcg actgggcgtg gagcatctgg tcgcattggg tcaccagcaa 1800
atcgcgctgt tagcgggccc attaatgtct gtctcggcgc gtctgcgtct ggctggctgg 1860
cataaatatc tcaactcgaa tcaaattcag ccgatagcgg aacgggaagg cgactggagt 1920
gccatgtccg gttttcaaca aaccatgcaa atgtctgaat agggcatcgt tcccatcgcg 1980
atgctgggtg ccaacgatca gatggcgctg ggcgcaatgc gcgccattac cgagtccggg 2040
ctgcgcgttg gtgcggatat ctcggtagt ggatacgacg ataccgaaga cagctcatgt 2100
tatatcccg cgttaaccac catcaaacag gattttcgcc tgctggggca aaccagcgtg 2160
gaccgcttgc tgcaactctc tcaggggccag gcggtgaagg gcaatcagct gttgcccgct 2220
tcaactggtg aaagaaaaac caccctggcg cccaatacgc aaaccgcctc tccccgcg 2280
ttggccgatt cattaatgca gctggcacga caggtttccc gactggaaag cggcgagtga 2340
gcgcaacgca attaatgtaa gttagcgca attgtcgacc aaagcgcca tcgtgcctcc 2400
ccactcctgc agttcggggg catggatgcg cggtatagcc ctgctggttt cctggatgcc 2460
gacggatttg cactgccggt agaactccgc gaggtcgctc agcctcaggc agcagctgaa 2520
ccaactcgcg aggggatcga gcccggggtg ggcgaagaac tccagcatga gatccccg 2580
ctggaggatc atccagccgg cgtcccggaa aacgattccg aagcccaacc ttcatagaa 2640
ggcgcggtg gaatcgaaat ctctgatgg caggttgggc gtctgttggg gatagaaggc gatgcgtgc 2700
gaaccccaga gtcccgtcga gaagaactcg tcaagaaggc gatagaaggc gatgcgtgc 2760
gaatcgggag cggcgatacc gtaaagcac aggaagcgg atgtcctgat agcggctccg cacacccagc 2820
tcttcagcaa tatcacgggt agccaacgct ccattttcca ccatgatatt cggcaagcag 2880
cggccacagt cgatgaatcc agaaaagcgg ccgttcgggca tgcgcgctt gagcctggcg 2940
gcatcgccat gggtcacgac gagatcctcg ccttcgtcca gatcatcctg atcgacaaga 3000
aacagttcgg ctggcgcgag cccctgatgc tcttcgtcca gatcatcctg atcgacaaga 3060
ccgggttcca atccagtag tgctcgctcg atgcatggt tcgcttgggt gtcgaatggg 3120
caggtagccg gatcaagcgt atgcagccgc cgcattgcat cagccatgat ggatactttc 3180
tcggcaggag caaggtgaga tgacaggaga tcctgccccg gcaactcgcc caatagcagc 3240
cagtccttcc cgcgttcagt gacaacgtcg agcacagctg cgcaaggaa ccccgctcgtg 3300
ggcagcgca atagccgcgc tgctcgttcc tcaggttcat caggggcacc ggacaggtcg 3360
gtcttgacaa aaagaaccgg gcgcccctgc gctgacagcc ggaacacggc ggcacagag 3420
cagccgattg tctgttgtgc ccagtcatag ccgaatagcc tctccacca agcggccgga 3480
gaacctgcgt gcaatccatc ccatcagatc cttggcgcca agaaagccat ccagtttact 3540
tcagatcttg atccccctgc accagagggc gccccagctg gcaattccgg ttctgttgc 3600
ttgcaagggt tcccaacctt accagagggc tagctatcgc catgttaagc cactgcaagc tacctgcttt 3660
gtccataaaa ccgcccagtc cctgttccag atagcccagt agctgacatt catccgggg 3720
ctctttgcgc ttgcgttttc ggctttctac gtgttccgct tcctttagca gcccttgcg 3780
cagcaccggt tctgcggaact tgaagcttaa aaaactgcaa aaaatagttt gacttgtgag 3840
cctgagtgct tgcggcagcg cccaattgtg agcggataac aatttcacac attaaagagg 3900
cggataacaa ttaagatgta agaaattaca tatg 3960

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<210> 148

<211> 112

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: pHE4-5
promoter sequence

<400> 148

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aagcttaaaaa aactgcaaaa aatagtttga cttgtgagcg gataacaatt aagatgtacc 60
caattgtgag cggataacaa ttccacacat taaagaggag aaattacata tg 112

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<210> 149

-59-

<211> 106
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 149
gagcgcggat cgcaccat gaaggtctcc gtggctgcc tctctgcct catgcttgtt 60
actgcccttg gatctcaggc cagctacaat caccttcaag gagatg 106

<210> 150
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 150
gagcgcggat ccctatgagt gtaccaccat tggaag 36

<210> 151
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 151
ccggccatat gcgtaaaactg ttctctttca cc 32

<210> 152
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 152
ccggcggtag cttattatga gtgtaccacc attgg 35

<210> 153
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 153
gatcgccata tggctggctg tcacgttcgt tc 32

<210> 154
<211> 39

-60-

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 154
gatcgcggtg ccttattatg agtgtaccac cattggaag 39

<210> 155
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

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<210> 156
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<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 156
gatcgcggtg ccttattatg agtgtaccac cattggaag 39

<210> 157
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

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gatcgccata tggctggtcg tcacgttcgt tc 32

<210> 158
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

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<210> 159
<211> 32
<212> DNA
<213> Artificial Sequence

-61-

<220>

<223> Description of Artificial Sequence: primer

<400> 159

gatcgccata tggctggtcg tcacgttcgt tc

32

<210> 160

<211> 39

<212> DNA

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39

<210> 161

<211> 47

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

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47

<210> 162

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

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<210> 163

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<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

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47

<210> 164

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

-62-

<400> 164
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<210> 165
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 165
gatcgcggtat ccgccaccat gtggaaatgg atactgacac attgtgc 47

<210> 166
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

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<210> 167
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<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 167
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<210> 168
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

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<210> 169
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 169
gatcgccata tggctggtcg tcacgttcgt tc. 32

-63-

<210> 170
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<220>
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<400> 170
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<220>
 <223> Description of Artificial Sequence: primer

<400> 171
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<210> 172
 <211> 39
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: primer

<400> 172
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<210> 173
 <211> 456
 <212> DNA
 <213> Escherichia coli

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 aaactgttct ctttcaccaa atacttcctg aaaatcgaaa aaaacggtta agtttctggg 120
 accaagaagg agaactgccc gtacagcatc ctggagataa catcagtaga aatcggagtt 180
 gttgccgtca aagccattaa cagcaactat tacttagcca tgaacaagaa ggggaaactc 240
 tatgggtcaa aagaatttaa caatgactgt aagctgaagg agaggataga ggaaaatgga 300
 tacaatacct atgcatcatt taactggcag cataatggga ggcaaatgta tgtggcattg 360
 aatggaaaag gagctccaag gagaggacag aaaacacgaa ggaaaaacac ctctgctcac 420
 tttcttccaa tgggtgtaca ctcataataa ggtacc 456

<210> 174
 <211> 48
 <212> DNA
 <213> Artificial Sequence

<220>
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<400> 174

-64-

gactacatat ggctgggtcgt cacgttcgtt cttacaacca cctgcagg

48

<210> 175

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<212> DNA

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<220>

<223> Description of Artificial Sequence: primer

<400> 175

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47

<210> 176

<211> 447

<212> DNA

<213> Escherichia coli

<400> 176

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ctgttctctt	tcaccaaata	cttctgaaa	atcgaaaaga	acggtaaaagt	ttctgggtacc	120
aagaaagaaa	actgcccgtg	ctctatcctg	gaaatcacct	ccgttgaaat	cggtgttgta	180
gccgttaaa	ccatcaactc	caactattac	ctggccatga	acaaaaagg	taaaactgtac	240
ggctctaaa	aattcaacaa	cgactgcaaa	ctgaaagaac	gtatcgaaga	gaacgggttac	300
aacacctacg	catccttcaa	ctggcagcac	aacgggtcgtc	agatgtacgt	tgactgaac	360
ggtaaaggcg	ctccgcgtcg	cggtcagaaa	accgcgcgca	aaaacacctc	tgctcacttc	420
ctgccgatgg	ttgtacactc	ataataa				447

Applicant's or agent's file reference number	1488.036PC0K	International application No. PCT/US00/18328
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>412</u> , line <u>29</u> .	
B. IDENTIFICATION OF DEPOSIT	
Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 03 July 2000	Accession Number PTA-2183
C. ADDITIONAL INDICATIONS (leave blank if not applicable)	
This information is continued on an additional sheet <input type="checkbox"/>	
(DNA Plasmid (Human): pHE4.KGF-2.A63-S208)	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

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Applicant's or agent's file reference number	1488.036PC0K	International application No. PCT/US00/18328
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Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 03 July 2000	Accession Number PTA-2184
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
(DNA Plasmid (Human): pHE4.KGF-2.A63-S208c.o.)	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
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Applicant's or agent's file reference number	1488.036PC0K	International application No. PCT/US00/18328
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Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 03 July 2000	Accession Number PTA-2183
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
DNA Plasmid (Human): pHE4.KGF-2.A63-S208 In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

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<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer

(DNA Plasmid DNA Plasmid (Human): pHE4.KGF-2.A63-S208) Page 2 of 4

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

CANADA

The applicant hereby requests that, until either a Canadian patent has been issued on the basis of the application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the furnishing of a sample of deposited biological material referred to in the application only be effected to an independent expert nominated by the Commissioner of Patents.

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent office or any person approved by the applicant in the individual case.

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Registration), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the National Board of Patents and Registration or any person approved by the applicant in the individual case.

ICELAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the Icelandic Patent Office), or has been finally decided upon by the Icelandic Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

(DNA Plasmid DNA Plasmid (Human): pHE4.KGF-2.A63-S208) Page 3 of 4

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in Rule 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

NORWAY

The applicant hereby requests that, until the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Norwegian Patent office or any person approved by the applicant in the individual case.

SINGAPORE

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent office or any person approved by the applicant in the individual case.

(DNA Plasmid DNA Plasmid (Human): pHE4.KGF-2.A63-S208) Page 4 of 4

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

Applicant's or agent's file reference number	1488.036PC0K	International application No. PCT/US00/18328
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

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B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
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Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 03 July 2000	Accession Number PTA-2184
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
DNA Plasmid (Human): pHE4.KGF-2.A63-S208c.o. In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

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<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

(DNA Plasmid (Human): pHE4.KGF-2.A63-S208c.o.)

Page 2 of 4

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

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ICELAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the Icelandic Patent Office), or has been finally decided upon by the Icelandic Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

(DNA Plasmid (Human): pHE4.KGF-2.A63-S208c.o.)

Page 3 of 4

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in Rule 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

NORWAY

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SINGAPORE

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SWEDEN

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(DNA Plasmid (Human): pHE4.KGF-2.A63-S208c.o.)

Page 4 of 4

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

Applicant's or agent's file reference number	1488.036PCOK	International application No. (TO BE ASSIGNED)	
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>413</u> , line <u>23</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 03 July 2000	Accession Number TO BE ADVISED
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
(TO BE ADVISED) In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

*(DNA Plasmid (TO BE ADVISED))**Page 2 of 4***AUSTRALIA**

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*(DNA Plasmid (TO BE ADVISED))**Page 3 of 4***NETHERLANDS**

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SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent office or any person approved by the applicant in the individual case.

(DNA Plasmid (TO BE ADVISED))

Page 4 of 4

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

Applicant's or agent's file reference number	1488.036PC0K	International application No. (TO BE ASSIGNED)
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>412</u> , line <u>29</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit 03 July 2000	Accession Number TO BE ADVISED
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
(TO BE ADVISED) In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

*(DNA Plasmid (TO BE ADVISED))**Page 2 of 4***AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

CANADA

The applicant hereby requests that, until either a Canadian patent has been issued on the basis of the application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the furnishing of a sample of deposited biological material referred to in the application only be effected to an independent expert nominated by the Commissioner of Patents.

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent office or any person approved by the applicant in the individual case.

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Registration), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the National Board of Patents and Registration or any person approved by the applicant in the individual case.

ICELAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the Icelandic Patent Office), or has been finally decided upon by the Icelandic Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

*(DNA Plasmid (TO BE ADVISED))**Page 3 of 4***NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in Rule 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

NORWAY

The applicant hereby requests that, until the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Norwegian Patent office or any person approved by the applicant in the individual case.

SINGAPORE

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SWEDEN

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(DNA Plasmid (TO BE ADVISED))

Page 4 of 4

UNITED KINGDOM

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Applicant's or agent's file reference number	1488.036PC0K	International application No. (TO BE ASSIGNED)
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>151</u> , line <u>18</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit January 9, 1998	Accession Number 209575
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
DNA Plasmid pHEKGF-2delta33 In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

AUSTRALIA

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CANADA

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DENMARK

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FINLAND

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ICELAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the Icelandic Patent Office), or has been finally decided upon by the Icelandic Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in Rule 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

NORWAY

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SINGAPORE

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SWEDEN

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(DNA Plasmid pHEKGF-2delta33)

Page 4 of 4

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

Applicant's or agent's file reference number	1488.036PC0K	International application No. (TO BE ASSIGNED)
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>399</u> , line <u>19</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit June 30, 1999	Accession Number PTA-289
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
DNA Plasmid pVGI-0:Δ33 KGF2 (Ref. PF155) In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

CANADA

The applicant hereby requests that, until either a Canadian patent has been issued on the basis of the application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the furnishing of a sample of deposited biological material referred to in the application only be effected to an independent expert nominated by the Commissioner of Patents.

DENMARK

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Registration), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the National Board of Patents and Registration or any person approved by the applicant in the individual case.

ICELAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the Icelandic Patent Office), or has been finally decided upon by the Icelandic Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in Rule 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

NORWAY

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SINGAPORE

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SWEDEN

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(DNA Plasmid pVGI-0:Δ33 KGF2 (Ref. PF155))

Page 4 of 4

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

Applicant's or agent's file reference number	1488.036PC0K	International application No. (TO BE ASSIGNED)
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>399</u> , line <u>11</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit June 30, 1999	Accession Number PTA-290
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
DNA Plasmid pVGI-0: KGF2 (F.L.) (Ref. PF155) In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable) The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

*(DNA Plasmid pVGI-0: KGF2 (F.F.) (Ref. PF155))**Page 2 of 4***AUSTRALIA**

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

CANADA

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DENMARK

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FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Registration), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the National Board of Patents and Registration or any person approved by the applicant in the individual case.

ICELAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the Icelandic Patent Office), or has been finally decided upon by the Icelandic Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

NETHERLANDS

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NORWAY

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SINGAPORE

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SWEDEN

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(DNA Plasmid pVGI-0: KGF2 (F.F.) (Ref. PF155))

Page 4 of 4

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

Applicant's or agent's file reference number	1488.036PCOK	International application No. (TO BE ASSIGNED)
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>20</u> , line <u>21</u> .	
B. IDENTIFICATION OF DEPOSIT	
Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit September 29, 1994	Accession Number 75901
C. ADDITIONAL INDICATIONS (leave blank if not applicable)	
This information is continued on an additional sheet <input type="checkbox"/>	
DNA Plasmid, 366,885	
In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

AUSTRALIA

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CANADA

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DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent office or any person approved by the applicant in the individual case.

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Registration), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the National Board of Patents and Registration or any person approved by the applicant in the individual case.

ICELAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the Icelandic Patent Office), or has been finally decided upon by the Icelandic Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in Rule 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

NORWAY

The applicant hereby requests that, until the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Norwegian Patent office or any person approved by the applicant in the individual case.

SINGAPORE

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent office or any person approved by the applicant in the individual case.

(DNA Plasmid 366,885)

Page 4 of 4

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

Applicant's or agent's file reference number	1488.036PCOK	International application No. (TO BE ASSIGNED)
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**INDICATIONS RELATING TO A DEPOSITED MICROORGANISM
OR OTHER BIOLOGICAL MATERIAL**

(PCT Rule 13bis)

A. The indications made below relate to the deposited microorganism or other biological material referred to in the description on page <u>4</u> , line <u>11</u> .	
B. IDENTIFICATION OF DEPOSIT Further deposits are identified on an additional sheet <input checked="" type="checkbox"/>	
Name of depositary institution American Type Culture Collection	
Address of depositary institution (including postal code and country) 10801 University Boulevard Manassas, Virginia 20110-2209 United States of America	
Date of deposit December 16, 1994	Accession Number 75977
C. ADDITIONAL INDICATIONS (leave blank if not applicable) This information is continued on an additional sheet <input type="checkbox"/>	
DNA Plasmid, 366885A In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).	
D. DESIGNATED STATES FOR WHICH INDICATIONS ARE MADE (if the indications are not for all designated States)	
E. SEPARATE FURNISHING OF INDICATIONS (leave blank if not applicable)	
The indications listed below will be submitted to the international Bureau later (specify the general nature of the indications e.g., "Accession Number of Deposit")	

For receiving Office use only	For International Bureau use only
<input type="checkbox"/> This sheet was received with the international application	<input type="checkbox"/> This sheet was received by the International Bureau on:
Authorized officer	Authorized officer

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

CANADA

The applicant hereby requests that, until either a Canadian patent has been issued on the basis of the application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the furnishing of a sample of deposited biological material referred to in the application only be effected to an independent expert nominated by the Commissioner of Patents.

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent office or any person approved by the applicant in the individual case.

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Registration), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the National Board of Patents and Registration or any person approved by the applicant in the individual case.

ICELAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the Icelandic Patent Office), or has been finally decided upon by the Icelandic Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

*(DNA Plasmid 366885A)**Page 3 of 4***NETHERLANDS**

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in Rule 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

NORWAY

The applicant hereby requests that, until the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Norwegian Patent office or any person approved by the applicant in the individual case.

SINGAPORE

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent office or any person approved by the applicant in the individual case.

(DNA Plasmid 366885A)

Page 4 of 4

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for international publication of the application.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/18328

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : Please See Extra Sheet.

US CL : Please See Extra Sheet.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 530/350, 399; 536/23.1, 23.5; 435/69.4, 71.1, 71.2, 325, 471, 252.3, 254.11, 320.1; 514/2, 8, 12, 866, 885, 893

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONEElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim
A	WO 98/16642 A1 (AMGEN INC.) 23 April 1998 (23/04/98), see entire document.	1-12
A	WO 98/16243 A1 (AMGEN INC.) 23 April 1998 (23/04/98), see entire document.	1-12

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or prior date and not in conflict with the application but cited to understate the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
B earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*A* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

06 SEPTEMBER 2000

Date of mailing of the international search report

10 OCT 2000

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

PREMA MERTZ

Telephone No. (703) 308-0196

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/18328

A. CLASSIFICATION OF SUBJECT MATTER: IPC (7):

C07K 14/47, 14/475; C12N 5/10, 15/12, 15/16, 15/63, 15/64; A61K 38/16, 38/17, 38/18

A. CLASSIFICATION OF SUBJECT MATTER: US CL :

530/350, 399; 536/23.1, 23.5; 435/69.4, 71.1, 71.2, 325, 471, 252.3, 254.11, 320.1; 514/2, 8, 12, 866, 885, 893

B. FIELDS SEARCHED

Electronic data bases consulted (Name of data base and where practicable terms used):

WEST, CAS ONLINE, MEDLINE, CAPLUS

search terms: keratinocyte growth factor-2, fibroblast growth factor-12, mutein, mutant, recombinant, method, administer, therapy, treatment.

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